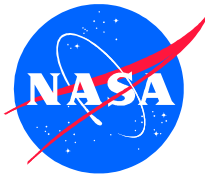


Smart Coating for In-Situ Monitoring of Engine Components

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INNOVATION

Depositing a crackwire incipient crack sensor on turbine engine disks and blades for detection based on signals generated from its interaction with microwaves

ACCOMPLISHMENTS

- ◆ Developed a method for nondestructive inspection (NDI) of disks and blades using a deposited crackwire sensor
- ◆ Developed a microwave based technique for non-contact sensing of crack initiation and location
- ◆ Method tested on sample coupons and a simulated disk

COMMERCIALIZATION

- ◆ Received a contract to participate in an FAA-sponsored test on an engine that will be run to destruction. Test results will be evaluated by the Navy and several engine manufacturers for further development and application
- ◆ Explore with engine manufacturers potential extension to sense additional engine safety and performance parameters
- ◆ Application of this technology will increase the safe operating life of turbine engines, as well as prevent catastrophic uncontained engine failures



*Developmental smart coating crackwire
sensor system shown with disk simulator*

GOVERNMENT/SCIENCE APPLICATIONS

- ◆ The Navy has stated that in-situ NDI can save \$1B on disk servicing over the life of an aircraft. Other fleet owners will also benefit proportionate operational savings
- ◆ Engine manufacturers are interested in using the technology for both in-service aircraft and during development